

CLAIMS

1. An apparatus for sealing a package (10), comprising a sealing unit (5a-b) and an abutment (6) between which a number of material layers are disposed to be clamped and sealed and fused together, the abutment (6) is connected to at least one elongate element (14a-c) which extend in a direction from the abutment (6) towards and past the sealing unit (5a-b), the elongate elements (14a-c), beyond the sealing unit (5a-b) are disposed to be connected to at least one first operating element (13), and an operating unit (7a-b) is disposed to apply a force between the sealing unit (5a-b) and said first operating element (13) so that these are displaced in a direction from one another and so that the abutment (6) and the sealing unit (5a-b) are displaced in a direction towards one another, **characterised in** that the force from the operating unit (7a-b) is applied to the sealing unit (5a-b) by the intermediary of a second operating element (15, 16a-b) comprising at least one force-restricting coupling member (17a-d) which is disposed to restrict the force between the operating element (15, 16a-b) and the sealing unit (5a-b) and thereby the force between the abutment (6) and the sealing unit (5a-b).

2. The apparatus as claimed in Claim 1, wherein the second operating unit (15, 16a-b) comprises at least a first (16a-b) and a second component (15), the first component (16a-b) being disposed to at least partly surround the second component (15) and the force-restricting coupling member (17a-d), the coupling member (17a-d) being disposed to apply a force between the components (15, 16a-b) so that these strive to be urged away from one another, and this striving to be urged away from one another is restricted by that portion (16c-d) of the first component (16a-b) which surrounds the second component (15) and is disposed to abut against the second component (15).

3. The apparatus as claimed in Claim 2, wherein said coupling member (17a-d) comprises a membrane whose outward flexing is disposed to be operated by a pressurised fluid, such as liquid or gas.

4. The apparatus as claimed in any of the preceding Claims, wherein the operating unit (7a-b) comprises an interconnection member (11, 11a-b) displaceable substantially transversely of the direction of movement of the sealing unit (5a-b) and the abutment (6), the interconnection unit being, on the one hand, connected to the sealing unit (5a-b) by the intermediary of a first linkage (12a, 12c) which is pivotally connected to the interconnection member (11, 11a-b) and that of said first and second components of the second operating element (15, 16a-b) which is not connected to the sealing unit (5a-b) and

which, on the other hand, is connected to the first operating element (13) by the intermediary of a second linkage (12b, 12d) which is pivotally connected to the interconnection member (11, 11a-b) and the second operating element (13).

5 5. The apparatus as claimed in any of the preceding Claims, wherein the second operating element (15, 16a-b) is slidably connected to said elongate element (14a-c).

10 6. The apparatus as claimed in Claim 1, wherein the operating unit (7a-b) is disposed, in a nominal end position, to converge the sealing unit (5a-b) and the abutment (6) to such an extent that a gap is formed between them, said gap being of a width which is less than the total thickness of those material layers which are intended to be sealed and fused together, and preferably less than the total thickness of those material layers which are intended to be sealed and fused together which are obtained when the sealing unit (5a-b) and the abutment (6) are urged towards one another with a force which is defined by a force-restricting coupling member (17a-d).

15 7. An apparatus for sealing a package (10) comprising a sealing unit (5a-b) and an abutment (6) between which a number of material layers are disposed to be clamped and sealed and fused together, **characterised in that** the abutment (6) and the sealing unit (5a-b) are connected to a common operating unit (7a-b) and are disposed to be converged towards one another in that both the sealing unit (5a-b) and the abutment (6) are displaced at substantially the same speed profile towards one another, and that the package (10) is disposed to be displaced in a direction transversely of the direction of movement of the sealing unit (5a-b) and the abutment (6) and that the apparatus is operative initially to displace the package (10) at a higher speed in the transverse direction than the speed of the sealing unit (5a-b) and the abutment (6) in their respective directions of movement, whereafter the apparatus is operative to displace the package (10) at a lower speed in the transverse direction than the speed of the sealing unit (5a-b) and the abutment (6) in their respective directions of movement, whereafter the apparatus is operative to displace the package (10) at a higher speed in the transverse direction than the speed of the sealing unit (5a-b) and the abutment (6) in their respective directions of movement.

30 8. The apparatus as claimed in Claim 7, wherein the abutment (6) is connected to at least one elongate element (14a-c) which extends in a direction from the abutment (6) towards and past the sealing unit (5a-b), the elongate elements (14a-c), beyond the sealing unit (5a-b), being disposed to be connected to at least one first operating element (13) and the operating unit (7a-b) is disposed to apply a force between the sealing unit (5a-b) and

said first operating element (13) so that these are moved in a direction away from one another and so that the abutment (6) and the sealing unit (5a-b) are moved in a direction towards one another.

9. An apparatus for sealing a package (10) comprising a sealing unit (5a-b) and an
5 abutment (6) between which a number of material layers are disposed to be clamped and sealed and fused together, **characterised in that**, in a nominal end position, the sealing unit (5a-b) and the abutment (6) are converged to such an extent that a gap is formed between them, the gap being of a width which is less than the total thickness of those
10 material layers which are intended to be sealed and fused together, and preferably less than the total thickness of those material layers which are intended to be sealed and fused together which is obtained when the sealing unit (5a-b) and the abutment (6) are moved towards one another with a force which is defined by a force-restricting coupling member (17a-d).

10. The apparatus as claimed in Claim 9, wherein the abutment (6) and the sealing
15 unit (5a-b) are connected to a common operating unit (7a-b) and are disposed to be converged towards one another in that both the sealing unit (5a-b) and the abutment (6) are displaced with substantially the same speed profile towards one another, and that the package (10) at the same time is disposed to be displaced in a direction transversely of the direction of movement of the sealing unit (5a-b) and the abutment (6).

20 11. The apparatus as claimed in Claim 10, which is operative initially to displace the package (10) at a higher speed in the transverse direction than the speed of the sealing unit (5a-b) and the abutment (6) in their respective directions of movement, whereafter the apparatus is operative to displace the package (10) at a lower speed in the transverse
25 directions of movement, whereafter the apparatus is operative to displace the package (10) at a higher speed in the transverse direction than the speed of the sealing unit (5a-b) and the abutment (6) in their respective directions of movement.

12. A method of sealing a package (10) comprising the steps of:

30 forming a sheet-shaped or web-shaped packaging blank into a tube in that two edges are welded and fused together in a joint (10d) with the one edge overlapping the other edge,

orienting the tube (10) so that said joint is turned to face towards an ultrasound sealing unit (5a-b),

for transversely sealing the tube (10), clamping together this between the ultrasound sealing unit (5a-b) and an abutment (6),

activating the ultrasound sealing unit (5a-b) before this and the abutment (6) have approached one another and clamped together the packaging blank (10) to such an extent
5 that a sealing of the packaging blank (10) is realised,

cutting, by the prior activation of the ultrasound sealing unit (5a-b), an incision at said joint (10d), the incision extending, on the one hand, along the transverse seal and, on the other hand, extending at least partly through a material layer in said joint (10d), and

further converging the ultrasound sealing unit (5a-b) and the abutment (6)
10 for realising a seal.